

RED ROCK POPPY

Eschscholzia minutiflora S. Wats. ssp. *twisselmannii* Clark and Faull

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Management Status: Federal: USFWS Species of Concern; BLM Sensitive
California: S2.2, G5T1 (CDFG, 1998)
CNPS: List 1B RED code 3-2-3 (Skinner and Pavlik, 1994)

General Distribution:

Red Rock poppy is known only from the northeast end of the Rand Mountains (more precisely, the Summit Range), and from the El Paso Mountains, both in Kern County, or the former perhaps extending into San Bernardino County. According to Clark and Faull (1991), three-quarters of the known population occurs in Red Rock Canyon State Park. There is a possible occurrence on Edwards Air Force Base, based upon a photograph taken by David Charlton and shown to Mark Faull (Faull, pers. comm., 1997). The poppy may also occur in the Death Valley area. Dedecker (1984) reports *Eschscholzia parishii* from the Black Mountains (east of Death Valley), which Clark and Faull (1991) believe may be Red Rock Poppy but they had not examined specimens from that area, so this is far from certain. The identification appears to be based largely on the fact that the Death Valley region is outside the range of Parish's Poppy (*Eschscholzia parishii*), as otherwise understood.

Distribution in the West Mojave Planning Area:

All known occurrences of Red Rock Poppy, including the probable occurrence on Edwards Air Force Base, are within the WMPA. The possible location in the Black Mountains is outside the eastern boundary .

The taxon is definitely known from only four locations: Red Rock Canyon State Park (although it occurs in many locations within the Park which have been documented by Mark Faull) (Clark, pers. comm., 1998); Mesquite Canyon, 0.4-0.6 mi. (0.6-1 km) north of Randsburg Road; 2 mi. (3.2 km) SE of Searles Station (which may be in San Bernardino County, and is in the Summit Range); and on an "unnamed road 1.2 mi. (1.9 km) N of Red Rock-Randsburg Rd at a jct 3.3 mi. (5.3 km) E of the jct of CA Hwy 14 and Red Rock-Randsburg Rd. *Clark 641*" (Clark, pers. comm., 1998).

Natural History:

Very little is known about the biology of this subspecies. It was first described in 1991 (Clark and Faull, 1991) and has remained poorly known since that time.

Nothing is known about its pollination biology or seed dispersal, though presumably it is outcrossing and insect pollinated, based on the relatively large size of its flowers. The entire *E. minutiflorum* (s.l.) complex consists of strict annuals that depend entirely on seed to maintain populations from year to year. Presumably the seeds of this

species are relatively long-lived and can persist in the soil through several years of drought, as is true of many other desert annuals. The plants of this subspecies are spring annuals that germinate in the fall or winter and flower the following spring. *Eschscholzia minutiflora* s.l. will not germinate after summer rains when soil temperatures are relatively high.

Eschscholzia minutiflora s.l., as presently understood (Clark, 1993), is a widespread annual which includes the three subspecies (*minutiflora*, *covillei*, and *twisselmannii*). Plants are generally erect and about 2-14 in. (5-35 cm) tall. Like all members of the genus, they are glabrous and the foliage tends to be gray or blue-glaucous, apparently due to a waxy covering. An important difference that is supposed to separate *E. minutiflora* (especially the large flowered Red Rock Poppy) from Parish's Poppy is that the leaf segments in *E. minutiflora* are short and obtuse at the tip, whereas those of Parish's Poppy are longer and more acute. Based on specimens at UCR, this distinction appears to be subtle and perhaps inconsistent. Its utility appears questionable in many cases. *E. minutiflora* is generally most conspicuously characterized by its very small flowers and particularly by the related shortness of the petals. However, Red Rock Poppy is distinctive within the species, in that it has larger flowers (petals 0.16-0.8 in., 4-20 mm) that resemble those of *E. parishii*, but this fact is somewhat confounded by the great range of variation in all the subspecies. There is a large amount of overlap with Coville's poppy (*E. m. ssp. covillei*; petals 0.28-0.72 in., 7-18 mm) in particular. However, Clark and Faull have observed that "in regions where two or more of the subspecies co-occur, at any one time the petals of ssp. *twisselmannii* are consistently larger than those of ssp. *covillei*, and the latter are consistently larger than ssp. *minutiflora*, but petal size markedly decreases in all three subspecies over the course of a growing season" (Clark, pers. comm., 1998 from unpublished data).

The most diagnostic characteristic of Red Rock Poppy, relative to the other two subspecies of *E. minutiflora* is that it is diploid with a chromosome number of $n=6$ (Clark and Faull, 1991), whereas ssp. *covillei* and ssp. *minutiflora* have 12 and 18 chromosomes, respectively. Red Rock Poppy appears to be the diploid ancestor of the two more widespread subspecies.

Seeds of Red Rock Poppy, and the other subspecies of *E. minutiflora*, are more oblong and lack micropapillae (minute finger-like projections) and jugiform cells (paired curved cells forming a donut-like structures), which distinguishes them from seeds of *E. parishii*, which have micropapillae, are spherical and commonly have jugiform cells (Clark and Jernstedt, 1978; Clark and Faull, 1991).

Habitat Requirements:

Red Rock Poppy may be substrate-specific to rhyolite tuffs, granitics and similar rocks (Clark and Faull, 1991), but since these are common rock types, this is not much of a restriction. Also, since the number of observations of the species is small, the ability to generalize from the few samples is limited.

Populations occur at elevations between 2300 and 3280 ft. (700-1000 m), with the probable Edwards Air Force Base population also within this range. The possible Black Mountains population is at an unknown elevation.

Population Status:

According to Clark and Faull (1991), three-quarters of the known population occurs in Red Rock Canyon State Park, but the number of individuals involved was not estimated at the time of the original description of the taxon. Faull has since estimated these numbers (Clark, pers. comm., 1998). The extent of the distribution of this species and the size of populations is apparently still poorly known. It is not clear exactly how many of the herbaria of California were sampled before the subspecies was described; however, the collections at the University of California, Berkeley (UC), Rancho Santa Ana Botanic Garden (RSA), University of California, Davis (DAV), and the California Academy of Sciences (CAS) were examined. Clark notes that there is a “Mosquin collection at UC, RSA, and presumably UCLA from near Searles Station that is undoubtedly ssp. *twisselmannii*. There were no other specimens at UC, DAV, or CAS in the 1970s, or RSA in the mid-1980s” (Clark, pers. comm., 1998 regarding his personal observations).

Threats Analysis:

The CNPS inventory (Skinner and Pavlik, 1994) states that Red Rock Poppy is threatened by vehicles, but the extent of this threat is unknown. There may be other threats in various areas, but so little is known about this plant that it is impossible at this time to outline the nature of any additional threats. Certainly there is nothing in the literature that documents any existing major threats. The fact that a significant percentage of the known population is within a protected area (Red Rock Canyon State Park), suggests that any threats are not critical at present.

Biological Standards:

This taxon is probably reasonably well protected by virtue of the fact that much of its known population is within the boundaries of Red Rock Canyon State Park where potential disturbance is minimal. However, the extent of populations outside that area is poorly documented. The presence of unconfirmed and suspected populations far from the area of known occurrence strongly suggests a need for extensive survey work for this species to determine its exact status. It is entirely possible that this plant has many more populations scattered across the Mojave Desert than is presently known. It may be either an extremely rare and local species, as it presently appears, or a relatively widespread, though still rare, one as appears at least remotely possible based on the few scattered records and reports. It would be extremely desirable to have a wide range of herbarium specimens examined to determine whether there are additional populations that have been collected, but which were misidentified as Parish's Poppy (*Eschscholzia parishii*), or another species.

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